

METHODS AND APPARATUSES FOR MECHANICAL AND CHEMICAL-  
MECHANICAL PLANARIZATION OF MICROELECTRONIC-DEVICE  
SUBSTRATE ASSEMBLIES ON PLANARIZING PADS

ABSTRACT OF THE DISCLOSURE

Apparatuses and methods for planarizing a microelectronic-device substrate assembly on a planarizing pad. In one aspect of the invention, material is removed from the substrate assembly by pressing the substrate assembly against a planarizing surface of a planarizing pad and moving the substrate assembly across the planarizing surface through a planarizing zone. The method also includes replacing at least a portion of a used volume of planarizing solution on the planarizing surface with fresh planarizing solution during the planarization cycle of a single substrate assembly. The used planarizing solution can be replaced with fresh planarizing solution by actively removing the used planarizing solution from the pad with a removing unit and depositing fresh planarizing solution onto the pad in the planarizing zone. The used planarizing solution, for example, can be removed either while the substrate assembly is moved through the planarizing zone, or between planarizing stages of a multi-stage planarizing process. In another aspect of the invention, a planarizing machine for planarizing microelectronic-device substrate assemblies includes removing unit at the accumulation zone to actively remove used planarizing solution from the accumulation zone on the stationary planarizing pad.

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